Elements and Atoms Test

Interpreting Diagrams Use the periodic table below to answer the following questions.

1. Which letter represents the metals on the periodic table? ________________________________________
2. Which letter represents the noble gases on the periodic table? ___________________________________
3. Which letter represents a period on the periodic table? _________________________________________
4. Which letter represents the nonmetals on the periodic table? _________________________________
5. Which letter represents a group on the periodic table? _________________________________________

Multiple Choice Write the letter of the term or phrase that best completes each statement.

_______ 1. The smallest part of an element that can be identified as that element is
   a. a nucleus.  b. an atom.  c. an isotope.  d. a proton.

_______ 2. A material that can easily be hammered into different shapes
   a. has luster.  b. is ductile.  c. is malleable.  d. is brittle.

_______ 3. The first person to suggest the existence of atoms was

_______ 4. Of the following elements, the one that is not an example of a noble gas is
   a. neon.  b. argon.  c. oxygen.  d. radon.

_______ 5. All atoms of the same element have the same
   a. atomic number.  b. atomic mass.  c. number of neutrons.  d. shape.

_______ 6. A positively charged particle is
   a. an electron.  b. a neutron.  c. a proton.  d. an isotope.
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>7.</td>
<td>The element with the smallest atomic number is a. helium.</td>
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<tr>
<td>8.</td>
<td>To calculate the atomic mass of an element, you must know the mass of its protons.</td>
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<tr>
<td>9.</td>
<td>Atoms of the same element that have different atomic masses are a. protons.</td>
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<tr>
<td>10.</td>
<td>The scientist who constructed the first periodic table of the elements was a. Dmitri Mendeleev.</td>
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<tr>
<td>11.</td>
<td>The modern atomic theory was proposed by a. Dalton.</td>
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<td>12.</td>
<td>The energy levels of an atom contain a. protons.</td>
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<tr>
<td>13.</td>
<td>If an atom contains 13 protons, then it has a. 13 electrons.</td>
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<tr>
<td>14.</td>
<td>Atoms are made up of a. electrons.</td>
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<tr>
<td>15.</td>
<td>Solid nonmetals are a. shiny.</td>
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<tr>
<td>16.</td>
<td>Of the following particles, those not found in the nucleus of an atom are a. protons.</td>
</tr>
<tr>
<td>17.</td>
<td>Different atoms of the same element may have different a. numbers of protons.</td>
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<tr>
<td>18.</td>
<td>An electron can change energy levels only if it a. gains energy.</td>
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<tr>
<td>19.</td>
<td>The second energy level of an atom can hold a. 32 electrons.</td>
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<tr>
<td>20.</td>
<td>Atoms can join together to form a. elements.</td>
</tr>
<tr>
<td>21.</td>
<td>Because an atom is neutral, the number of a. electrons equals the number of protons.</td>
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</table>
| 22.      | In the periodic table, elements are arranged in order of a. decreasing atomic number.
Elements and Atoms Test  (continued)

Written Response  Answer the following questions in complete sentences.

23. **ANALYZE:** Why is the periodic table useful? Explain your answer. ______________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________

24. **INFER:** Why can elements be arranged in rows and columns by their properties? In other words, what makes elements have properties in common or properties that change in a constant way? 
___________________________________________________________________________________________
___________________________________________________________________________________________
___________________________________________________________________________________________
Answer Key

Elements and Atoms Test
Interpreting Diagrams

Multiple Choice
1. b  2. c  3. d  4. c  5. a  6. c  7. d  8. d  9. c  10. a
19. b  20. c  21. a  22. b

Written Response
23. The periodic table is useful because it offers a quick way to identify an element based on its properties. Also, in the past, it has allowed scientists to predict the properties of elements that had not yet been discovered. In addition, it allows scientists to predict how a given element will behave in a chemical reaction.

24. The patterns and properties displayed by the periodic table occur as a direct result of the atomic structure of each element, and especially as a result of the valence electrons. Since the electrons are arranged in energy levels, the elements have different properties depending on how full the energy levels are and which energy levels are full. The periodic table reflects these differences.